Teagasc
Agriculture and Food Development Authority

The Facts on Applying Lime

1 PADDOCK AVAILABILITY

Once fields have been grazed-off and grass covers are low, it is an ideal time to apply lime. Identify blocks of land that require lime, for example this could require ordering a load of lime (20t) after each grazing rotation to correct soil pH (covers approx. 10 ac @ 2t/ac lime application rate). Aim to avoid high grass covers > 800kg DM/ha.

2 LIME RESIDUE ON GRASS

Ideally apply lime to low grass covers to reduce the risk of lime residues. Rainfall will typically wash most of the lime from the grass down to the soil. Where a small amount of lime remains on the leaf will not affect grazing animals. Grass covers on farms tend to be lowest (500kg DM/ha) during April and August (PastureBase Ireland (PBI)) and presents good timing for lime application.

3 SOFTENING OF THE GROUND / SOD

Soil types where a relatively thick (5-10cm) organic layer has formed above the top soil may be more prone to poaching during wetter period of the year. This organic layer holds a large store of acidity. Liming these soils to neutralise acidity and raise pH will create favourable conditions for biological activity (e.g. grass roots, earth worms, etc…) and the release of the nutrients stored in the organic matter.

As nutrients are released from organic matter, the resistance of the top few centimetres of soil to heavy trafficking may be temporarily reduced. To minimise these effects apply lime on ***"a little and often basis"*** and improve soil pH in stages over time. Don't exceed 5t/ha in a single application or apply split applications (2.5t/ha) over a number of years.

4 SILAGE FIELDS

Leave sufficient time (up to 3 months in dry weather) between applying lime and closing for grass silage for the lime to be fully washed into the soil. If lime is transported to the silage clamp or picked up in the baled silage, it may affect good preservation conditions for the silage (acidic conditions).

5 LIME & SLURRY

Spreading cattle slurry on fields that have received lime recently or freshly limed land, where the lime has not had sufficient time or rainfall to be washed into the soil, can result in a loss of up to 50% of the available slurry N. To minimise these N losses from slurry apply cattle slurry first and then apply the lime 7 to 10 days later.

6 LIME & UREA

For urea, a similar situation to cattle slurry where increased N loss (ammonia-N volatilisation) may occur where straight urea fertiliser is applied on recently limed land. Therefore apply urea first and apply the lime 7 to 10 days later to reduce the risk of N losses. However, where protected urea is being applied, early trial work indicates that it is safe to apply protected urea to fields that have been limed recently.

7 LIME & HIGH MOLYBDENUM SOILS

Soils with high Mo status may increase the risk of inducing a copper deficiency in grazing animals. On these soils increasing soil pH above pH 6.2 increases the availability of Mo in the soil and higher uptake of Mo by actively growing grass. Where farms are affected by high Mo soils maintain soils at or below soil pH 6.1 - 6.2. Alternatively, apply lime as recommended and supplement animals with copper.

8 SPEED OF REACTIVITY

Once lime is applied and is washed in it starts to adjust soil pH. At least 35% of ground limestone (350 kg/tonne) has a particle size < 0.15mm. This component of the lime is fast acting and very reactive and will start working immediately (0-6 months). The remaining 65% lime (650 kg/tonne) will be broken down in the soil in the medium term (6-24 months) and helps to maintain soil pH levels in the longer term until the soils are re-sampled in year 4-5.

9 RETURN ON INVESTMENT (ROI)

Research shows that liming acidic soils increases grass production by 1.0t DM/ha. On a drystock farm this is valued at €105/tonne DM and €180/t DM on a dairy farm. An application of 5t/ha of ground limestone to correct soil pH represents a cost of €25/ha/year over 5 years. The return on investment from lime gives €4 to 7 worth extra grass for every €1 invested in lime.

10 LIME TYPE

There are **two** main types of ground limestone that are available nationally – Calcium & Magnesium. Calcium lime is most widely available while Magnesium is mainly available in the South East.

Teagasc
Agriculture and Food Development Authority

Prepared by: ***Mark Plunkett, Teagasc Johnstown Castle***

For more information visit: ***www.teagasc.ie/crops/soil--soil-fertility/***